

# 2009 Climate Report

## Written by the Interdepartmental Climate Team

**Department of Natural Resources and Parks** 

**Department of Transportation** 

**Department of Development and Environmental Services** 

**Department of Public Health** 

**Department of Executive Services** 



www.kingcounty.gov/climate



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Department of Natural Resources and Parks
Department of Transportation
Department of Development and Environmental Services
Department of Public Health
Department of Executive Services

The Honorable Bob Ferguson Chair, King County Council Room 1200 C O U R T H O U S E

#### Dear Councilmember Ferguson:

I am pleased to submit to you the 2009 King County Climate Report. This report is the third annual report on implementation of the 2007 King County Climate Plan. The report complies with Executive Orders on Global Warming Preparedness PUT 7-5 through 7-8 and King County Council Motion 12362 which require an annual reporting of progress to the Executive and that a summary report be transmitted by the Executive to County Council by February, 1, 2010.

Climate change is already affecting our community and will have increasing impacts in the coming years. The measures the Executive and County Council have taken over the past several years have established a solid foundation in mitigating our region's contribution to climate change and in preparing for climate change impacts such as sea level rise and increased flood risk. The Climate Report outlines 2009 progress and 2010 plans in four key areas: leadership, mitigation of greenhouse gas emissions, adaptation to prepare for the impacts of climate change, and assessment.

The report shows the collaboration taking place inside King County government between divisions and departments. The Interdepartmental Climate Team's efforts have been critical in furthering the county's progress. This is exemplified by the attainment of more than \$75 million in climate and energy related grants that are projected to create more than 80 new green jobs.

In the coming year, King County will continue its focus on those programs that address the major sources of greenhouse gas emissions in this region, transportation and fossil fuel combustion. We will also work to make sure that our efforts are meaningful and address the long term needs of King County. These will lead to greater energy efficiency and improved transportation and sustainable housing options. King County will continue to promote and develop regional partnerships with other local governments, energy utilities, the development community, and the public so that we can implement the most effective solutions to the climate change challenge.

I look forward to our continued cooperation in this ongoing effort. If you have any questions regarding the Climate Plan or the Climate Report, please contact Bob Burns, Deputy Director of the Department of Natural Resources and Parks, at 206-263-6296, or Harold Taniguchi, Director of the Department of Transportation, at 206-684-1441.

Sincerely,

Dow Constantine

King County Executive

Enclosure

cc: King County Councilmembers

Dow Constanti

ATTN: Tom Bristow, Chief of Staff
Anne Noris, Clerk of the Council

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If you have any questions regarding the Climate Report, please contact Megan Smith in the Executive's Office at 206-263-9605 or Matt Kuharic in the Department of Natural Resources and Parks at 206-296-8738, or visit our Web site at <a href="https://www.kingcounty.gov/climate">www.kingcounty.gov/climate</a>.

This information is available in alternative formats. Call 206-296-6500 or 711 (TTY Relay).

## I. Executive Summary

The 2009 King County Climate Report documents actions during the last year that implement the 2007 King County Climate Plan. It also gives an overview of anticipated activities for 2010. The report outlines progress and plans in four key areas: leadership, mitigation of greenhouse gas emissions, adaptation to prepare for the impacts of climate change, and assessment. A few of the many accomplishments in 2009, and plans for 2010, are highlighted below.

#### Highlights of accomplishments in 2009:

#### Leadership

- Helped create and lead the Puget Sound New Energy Solutions consortium, which is focused on developing a regional clean energy economy.
- Conducted public outreach and education to promote recycling, waste reduction and commute trip reduction.
- Actively participated in development of state and federal climate change policies.

#### Mitigation

- Moved into the final stage of completing RapidRide bus rapid transit, which will provide frequent, streamlined service throughout the day in major transit corridors.
- Converted more than 3,000 traffic signal faces to Light Emitting Diodes (LEDs), saving nearly 1,500 megawatt hours of electricity per year and \$112,000.
- Increased the percentage of hybrid vehicles in the county's fleet to 6 percent and received a three-star Evergreen Fleets certification.
- Led planning for a regional electric vehicle project and acquired \$6 million in grant funding to support related efforts.
- Developed the Cedar Hills landfill biogas-to-renewable energy project.
- Continued recycling wastewater treatment biosolids for agricultural and forestry uses.
- Operated extensive recycling and reuse programs in county facilities.
- Made important strides in energy efficiency at government facilities and supported efficiency projects at regional housing projects such as the Issaquah sustainable transportation hub.

#### Adaptation

- Reduced current and projected flood risk by repairing levees and revetments, acquiring atrisk floodplain properties, and improving flood warning and prediction capacity.
- Planned for the impacts that projected sea level rise will have on county infrastructure.
- Began new efforts to plan for projected climate change impacts on public health.

#### Assessment

- Implemented an energy and greenhouse gas emissions tracking system to track emissions and better manage county operations by utilizing Utility Manager software.
- Reported annual operational greenhouse gas emissions to the Chicago Climate Exchange, and completed an audit of this data by the Financial Industry Regulatory Authority.

#### Highlights of plans for 2010:

#### Leadership

- Continue to provide leadership in collaborative efforts such as the electric vehicles initiative and the Puget Sound New Energy Solutions consortium.
- Continue to encourage and support climate-friendly behaviors such as recycling and commute trip reduction by county residents and organizations.

#### Mitigation

- Use more than \$75 million in grant funding (see appendix 1) for numerous projects that reduce greenhouse gas emissions by improving transit vehicles and infrastructure, making facilities more efficient, and offering citizens resources they can use to reduce their environmental impact, save money, and improve health.
- Continue developing wastewater biogas renewable energy projects.

#### Adaptation

 Develop a grant-funded program that will educate landowners and provide incentives for them to employ forest management practices that maximize carbon sequestration while maintaining a healthy and resilient ecosystem.

#### Assessment

• Lead a new project to quantify community greenhouse gas emissions, using both geographic and consumption based approaches. The results will lead to greater transparency and accountability for the county's climate efforts.

The county must continue responding to climate change to protect our environment, economy, quality of life, and public health. King County will continue working toward its adopted goal of reducing greenhouse gas emissions 80 percent below 2007 levels by 2050. At the same time, it will anticipate and prepare for the impacts of climate change on the natural and built environment and on human health. The county's citizens have major investments in public infrastructure that may be damaged by climate change impacts such as increased flood severity and sea level rise. It is prudent from a risk-management perspective to make investments now to avoid costly damage in the future.

In these difficult economic times, the argument might be made that addressing climate change should not be a priority. However, many of the county's climate response initiatives—such as switching to hybrid buses and installing LED traffic signals—have saved the government money while reducing emissions. The county will continue to pursue climate programs that save money, create new revenue streams, or lead to the creation of new green jobs for the region.

#### II. Introduction

King County legislative context

This 2009 King County Climate Report is the third annual report on implementation of the 2007 King County Climate Plan. The report complies with Executive Orders on Global Warming Preparedness PUT 7-5 through 7-8 and King County Council Motion 12362.

King County has been involved in efforts to mitigate and adapt to climate change for more than 15 years. These efforts coalesced in early 2006, when former County Executive Ron Sims issued several executive orders on global warming preparedness. Building on the Executive's directives, the Metropolitan King County Council passed a motion on global warming in October 2006. The Executive's and Council's directives required county departments to develop a Global Warming Mitigation and Preparedness Plan; the council motion also required annual progress reports. Other executive and legislative climate actions include: the Executive Order on Renewable Energy and Related Economic Development, the Chicago Climate Exchange Ordinance, the Flood Control Zone District Ordinance, the Green Building and Sustainable Development Ordinance, the Anti-Idling Ordinance, and the Vehicle Utilization Ordinance.

Taken together, these measures require county departments to take action in the areas of emissions assessment, land use, transportation, environmental management, energy use, emergency preparedness, green building, sustainable development and flood control. The actions should mitigate and prepare for climate change both in county government operations and in the region as a whole.

The county's overarching mitigation goal is to reduce greenhouse gas emissions in the region 80 percent below 2007 levels by 2050. The county's primary adaptation goals include incorporating climate change considerations into county plans, programs and projects, and collaborating with others to raise awareness about climate change impacts.

#### Local, state and federal climate action

The county's work took place in the context of a shift in global efforts to address climate change. In the past few years, local, regional and national governments have increasingly recognized the economic and environmental importance of addressing climate change. Cities and counties committed to strong climate action through the U.S. Mayor's Climate Protection Agreement and the Cool Counties Initiative. The Washington State Legislature passed legislation advancing energy efficiency, sustainable transportation, renewable energy and other climate protection strategies. Countries around the world adopted aggressive new policies to address the climate challenge.

The most significant potential changes in U.S. climate response are pending a U.S. Senate vote (following House passage of H.R. 2454, the American Clean Energy and Security Act of 2009). However, the Obama administration has already put an unprecedented focus on energy and climate protection as part of American economic recovery and development programs. Tens of billions of dollars are beginning to flow to programs that promote energy efficiency, sustainable transportation, smart grids and other responses to climate change.

#### Structure of King County climate action

King County's climate response is coordinated by an interdepartmental team that guides and coordinates county actions to carry out policy directives, provides departmental leadership, and works to institutionalize climate responses in county services, programs and projects. This group also responds to legislative mandates and pursues opportunities to collaborate with others for greater results. The team participates in local, regional and national groups and activities. The team also works for the passage of legislation at all levels that is consistent with county goals, by monitoring legislative developments, submitting comments, and testifying.

Because the team represents all county departments, it is positioned to guide collaboration and strategic decision-making on climate issues. Members of the climate team lead the countywide Energy Task Force, the Department of Natural Resources and Parks' and the Department of Transportation's climate teams, the State Environmental Policy Act and Climate Change Lead Agency Workgroup, and the Prosecuting Attorney's Office Green Team. They are members of the countywide Green Building Team, the Electric Vehicle Task Force and the Evergreen Fleets Initiative, among other efforts.

#### Rationale for climate action

According to the Intergovernmental Panel on Climate Change, the National Academies, the University of Washington's Climate Impacts Group and other scientific bodies, recent warming of the climate system is "unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global mean sea level." There is broad scientific consensus that human activities are the most significant factor in the increase in concentrations of atmospheric greenhouse gases such as carbon dioxide and methane. These gases are having an acute impact on Earth's climate because they trap infrared radiation that would otherwise escape to space. On a global scale, impacts include rising temperatures and sea levels, melting ice caps, diminished coral reefs and fisheries, the spread of vector-borne diseases, and more severe and frequent droughts and floods.

King County faces its own set of challenges related to climate change. Locally, climate change affects snowpack in the Cascade Mountains, stream flows, water supplies, and sea level—which in turn affect agriculture, stormwater, wastewater, wildfire risk, forest health, infrastructure and property, hydropower production, human health, salmon and biodiversity, and other sectors that we may not yet foresee<sup>2</sup>. Climate change could have dire effects on the region's economy<sup>3</sup> and quality of life.

In King County, the primary sources of greenhouse gas emissions are gasoline and diesel used for transportation; secondary sources are natural gas and oil used for heating buildings. Another important factor is the combustion of coal and natural gas to generate electricity. For King County government operations, the largest source of emissions is Metro bus fuel, followed by

<sup>&</sup>lt;sup>1</sup> Intergovernmental Panel on Climate Change. Available: <a href="http://www.ipcc.ch/index.htm">http://www.ipcc.ch/index.htm</a>

<sup>&</sup>lt;sup>2</sup> The Washington Climate Change Impacts Assessment. University of Washington. March 2009. Available: http://cses.washington.edu/cig/res/ia/waccia.shtml

<sup>&</sup>lt;sup>3</sup> An Overview of Potential Economic Costs to Washington of a Business-As-Usual Approach to Climate Change. University of Washington. Available: http://uonews.uoregon.edu/files/pmr/uploads/WA-Fnl\_Rpt.pdf

landfill emissions, electricity for wastewater plants, and employee vehicles. The Climate Team focused its mitigation efforts on those key areas.

Along with the challenges of climate change are opportunities to make changes that will benefit the county, such as the following:

- Improve operational efficiency, which can reduce staff and energy costs and improve the delivery of county services.
- Promote sustainable practices for government, residents and businesses, which can improve public health and yield other environmental benefits such as improved air and water quality.
- Create new green jobs and services, which can spark regional economic development and prosperity.

## III. 2009 Year in Review: Achievements and Works in Progress

The following section summarizes King County's work in 2009 to respond to climate change, both in county government operations and in the region.

King County departments have integrated climate responses into existing programs and plans as well as launching new projects. In addition to mitigating or adapting to climate change impacts, most of the efforts described below have yielded multiple benefits, such as cost savings, public health improvements, and the creation of new green jobs.

#### 1. 2009 Leadership

King County is well positioned to lead efforts to mitigate and adapt to climate change. It has a broad regional scope. Its relationships with citizens, businesses, governments and organizations of all types are the foundation for collaborative action. The county's leaders and employees have expertise in transportation, natural resources, public health, project management and other areas, enabling them to model and educate the public about climate-friendly practices. And as a large county government, King County is positioned to influence public policies at local, state and national levels. The county tapped all these attributes as it took climate action in 2009.

#### **Collaboration**

In early 2009, King County collaborated with 16 city and county governments, the four major energy utilities in the region, nonprofit organizations and businesses to form the Puget Sound New Energy Solutions (PSNES) consortium. PSNES's mission is to create a new energy economy for the region. It is working to create an interconnected, smart energy system that relies on clean resources to power the region's highly efficient transportation and building systems. In 2009 PSNES pursued funding for sustainable transportation hubs and helped coordinate regional electric vehicle programs.

Members of the county's climate team also participated in the following organizations in 2009:

- NaCo Green Government Program
- National Action Plan for Energy Efficiency
- ICLEI-Local Governments for Sustainability
- Climate Communities
- Washington State Environmental Policy Act and Climate Change Workgroup
- American Public Transportation Climate Change Working Group
- Washington State Ecology Greenhouse Gas Reporting Rule Advisory Committee
- Puget Sound Regional Council Climate Change Technical Working Group

#### **Outreach and education**

Outreach and education were an important focus in 2009. The Solid Waste Division ran an extensive Recycle More campaign as well as Eco Consumer and Eco Cool remodel programs to encourage citizens to increase recycling and make greener purchasing decisions. The Metro Transit Division ran a green marketing campaign to promote bus ridership; the division's Commute Trip Reduction program offered incentives to encourage people to try alternatives to driving alone.

The county's GreenTools program encouraged green and sustainable building by providing technical assistance to cities, nonprofit agencies, private developers and county residents. In 2009, the county offered workshops to affordable housing developers on sustainable building, made sustainability a high-priority criterion for evaluating applications for project funding, and assisted jurisdictions with improving permitting systems that promote green development.

The Wastewater Treatment Division, the Department of Development and Environmental Services, and the Department of Transportation all maintained websites with information about climate change.

The county also held workshops for employees on green construction and on alternative fuels and vehicles. It participated in outreach for other governments, such as the county's Environmental Purchasing Program leadership at the International Conference on Green Purchasing (a trip funded by the conference organizers) on best practices on cost-savings, data collection, and communication techniques.

The county also continued distributing *Preparing for Climate Change: A Guidebook for Local, Regional, and State Governments*, which it published in 2007 in collaboration with the University of Washington and ICLEI Local Governments for Sustainability, and supported training on this book through the Padilla Bay National Estuarine Research Reserve Coastal Training Program.

#### **Advocacy**

Over the past several years the county helped lay the groundwork for federal climate change legislation by participating in a legally binding cap and trade Chicago Climate Exchange emissions reduction program. In 2009 it continued its advocacy for market-based solutions for climate change. Concurrently, Metro Transit worked with the American Public Transportation Association to propose a rule changing the way bus transit greenhouse gas emissions are treated; this could result in a similar rule in federal cap-and-trade legislation that supports public transit.

In July, a King County staff member joined representatives of Chicago and New York City to brief 60 U.S. House and Senate staff members about local governments' climate change adaptation work and how the federal government could provide financial and technical support. This presentation was arranged through the Clean Air Policy Urban Leaders Adaptation Initiative.

County staff members were at the table as the PSRC drafted its *Transportation 2040* plan in 2009. They developed scenarios for expansion of bus service that would reduce the projected increase in greenhouse-gas emissions. At the state level, county staff actively participated in the Washington State climate response efforts and related development of state legislation.

#### 2. 2009 Mitigation: Reducing and Sequestering Greenhouse Gas Emissions

In 2009 transportation was a major focus of the Climate Team's mitigation efforts; not only is this sector the source of half the greenhouse gas emissions in the region, it also is an area where King County is a leading service provider. Additional large sources of emissions and important focus areas include solid waste and wastewater services. And as a major property owner, the county is modeling green building and sustainable development practices.

#### **Clean mobility**

Achievements in 2009 include Metro Transit's continued expansion of service and development of bus rapid transit under the TransitNow program—although declining revenues have forced Metro to adjust future plans. The Transit Division also ran an innovative transportation demand management program that encourages people to use non-motorized vehicles and public transportation for local travel.

Another highlight was the county's partnership in several successful applications for approximately \$22 million of federal stimulus funding to support electric vehicle deployment.

The county played a leadership role in founding the Puget Sound Clean Cities Evergreen Fleets Program, which coordinates efforts by local government fleet managers to reduce fuel consumption and greenhouse gas emissions. The county and 22 other governmental entities developed green fleet standards.

The county continues to reduce its non-revenue fleet's greenhouse gas emissions by changing the fleet mix, fuels, and practices. The county's Vehicle Utilization Policy ensures that its fleet of light-duty vehicles has the optimum number of vehicles and that vehicles are the right type and size. This policy saved the county over \$91,000 in 2009.

The county's successful anti-idling policy contributes to efficiency by mandating that non-revenue vehicles not idle more than three minutes in any sixty-minute period. In addition, the county has used biodiesel extensively in the Solid Waste Division fleets. As a result of these and other efforts to green the fleet, the Department of Transportation's Fleet Administration Division received a highest level certification from the Evergreen Fleets Program in October 2009.

As an employer, King County is working to reduce the impacts of employee commutes by putting policies and infrastructure in place to support telecommuting, alternative workweeks, and car sharing. In 2009 the county held it annual series of information fairs in county office buildings to educate employees about ways to green their commutes.

The following are additional accomplishments in transportation in 2009:

• Utilized diesel electric hybrid buses which saved over \$1,200,000 of fuel expense while reducing greenhouse gases by over 10,900 metric tons. Electric trolleys traveled over 2,900,000 miles, emitting no greenhouse gases. Future plans call for expanding this fleet.

- Increased the county's fleet of hybrid light-and heavy duty vehicles. Currently 6 percent of vehicles in the fleet are hybrids; in 2009 this saved nearly \$50,000 in operating costs and avoided more than 150 metric tons of carbon dioxide emissions.
- Leveraged grant funds to explore new transit vehicle technologies.
- Avoided more than 14,000 single occupant vehicle trips by promoting Metro's Commute Trip Reduction Program.
- Launched a pilot "pay as you drive" insurance project with Unigard insurance.
- Continued to expand Metro's VanShare/VanPool program.
- Continued to implement an Intelligent Transportation System (ITS) throughout King County that now includes 49 signals and 55 cameras connected to a Traffic Control Center to improve traffic flow.
- Included electric vehicle plug-in stations in low-income housing projects to make the technology accessible to low-income citizens.

#### Waste-to-resources and waste-to-energy

King County has a long and ongoing history of conducting government waste reduction and waste-to-energy projects. Extensive waste-to-energy biogas production systems have been developed as an integral part of the county's waste management facilities. These projects have added large and valuable renewable, greenhouse gas-neutral energy resources to the county's energy portfolio, in addition to reducing waste and capturing dangerous pollutants. These facilities include large biogenic gas-to-commercial-natural-gas processing facilities at the Cedar Hills landfill and at the South Plant wastewater treatment plant, and a wastewater biogas combined heat and electric power project at West Point wastewater treatment plant, due to be operational in 2012. The total energy resource these plants represent is equivalent to a power plant of approximately 30 average megawatts—enough renewable electricity to supply more than annual electrical needs of 25,000 homes. In addition, the Wastewater Treatment Division's biosolids program ensures that valuable byproducts of sewage treatment processes are recycled for use in forestry and agriculture at several Washington sites, reducing the need for energy-intensive synthetic fertilizers.

The county also continued to operate and sponsor programs to reduce and reclaim waste products created by county employees and residents. In 2009 the county operated or supported the following programs:

- Solid waste prevention and recycling programs for traditional recyclables, electronic waste (E-scraps), compact fluorescent light bulbs and food waste.
- A dairy digester biogas-to-energy project.
- A carbon sequestration pilot project on Vashon Island.
- Composting of food scraps in the jail cafeteria and King Street Center employee office building. This not only reduces methane emissions and creates valuable soil amendments, it also has reduced garbage collection costs by thousands of dollars annually.
- A curbside organics collection infrastructure that is now available to all King County single-family households and many businesses.

All of these programs directly or indirectly reduce greenhouse-gas emissions and provide examples for county residents of cost-effective ways to protect the environment.

#### **Energy and resource efficiency**

King County government is dedicated to using energy and resources efficiently. A multidepartment Energy Task Force developed a county Energy Plan with specific energy reduction goals and plans that are currently underway. Actions include deployment of several million dollars in federal stimulus funds for energy conservation projects, development of a program to start self-funding energy efficiency projects, and building enhanced awareness of utility conservation grant opportunities.

To promote energy efficiency in the region, the county offers a Green Tools program to educate county residents about green building methods, grants to recognize and encourage the best commercial and residential green building designs, and support for an affordable green housing pilot project as part of the economic justice initiative.

The Department of Transportation has converted more than 3,000 traffic signal faces to LEDs, saving nearly 1,500 MWh of electricity per year and \$112,000. The county has also reused asphalt from overlay projects to avoid the disposal of more than 70 tons of material, and has incorporated fly ash into concrete construction projects to avoid greenhouse gas emissions equivalent of 8,000 gallons of gasoline.

The Facilities Management Division (FMD) continues to invest in cost-effective energy efficiency projects. Highlights include supply- and demand-side energy projects at the Courthouse and Correctional Facility and operational energy reductions at the Maleng Regional Justice Center. FMD is also now acquiring 30 percent of its energy from renewable energy sources. For these existing projects as well as several near-term projects, FMD has received nearly \$1.7 million in incentives and grants from Puget Sound Energy and Seattle City Light. The projects are having verifiable results; from September 2008 through June 2009, overall energy costs dropped approximately 21 percent compared to the prior year, resulting in cost savings of more than \$950,000.

The county has been involved in several housing projects that will result in increased energy and resource efficiency. Several King County departments have been partners with the City of Issaquah, Puget Sound Energy, YWCA, Howland Homes, and the Built Green program to put forward the Issaquah HUB, a zero-net-energy affordable housing and commercial development. Construction of the Family Village at Issaquah, one component of the Issaquah HUB, started in December 2009. King County also issued a request for proposals for the Sustainable Communities and Housing Pilot Project. This project uses the county's surplus land to promote affordable workforce housing that incorporates bike/pedestrian connections, use of recyclable materials, low-impact development, solar or other alternative energy sources, enhanced energy conservation and other design elements that reduce climate change impacts from development.

The Department of Community and Human Services (DCHS) included a sustainability criterion in its evaluation process for applications for county funding. The DCHS Housing Finance Program also adopted the state's Evergreen Sustainable Development Standard to promote energy conservation, sustainable building practices and operational savings in affordable multifamily housing projects. Applicants are required to make a sustainable building plan using

the Evergreen checklist. All mandatory criteria that apply to a given project must be included in the plans and construction.

The King County Green Building and Sustainable Development Ordinance encourages green building practices in all King County building and infrastructure projects. In 2009, the Green Operations and Maintenance Guidelines, required by the ordinance, were defined. The guidelines provide information on activities such as improving building operations through energy and water conservation, sustainable design and construction practices, and improved site maintenance practices. In addition, the Green Building Team developed the Sustainable Infrastructure Scorecard that will track the green strategies used by county infrastructure projects.

The county's Information Technology section introduced new programs this year that automatically turn off computers after certain hours and put them in sleep mode after 15 minutes of non-use, saving energy and money. In the 2009 calendar year, this project reduced approximately 1,750 metric tons of carbon dioxide equivalent emissions and saved an estimated \$184,000 in energy costs.

#### 3. 2009 Adaptation: Preparing for the Impacts of Climate Change

King County is the owner and steward of many public properties, roads, bridges, buildings and other assets that are essential for the well-being of county residents. The county must assess the impacts climate change might have on these assets, and make prudent investments to ensure their survival as environmental conditions change.

#### **Natural environment**

The King County Flood Control District continued efforts to mitigate current and projected flood risk by investing approximately \$35 million to address the backlog of maintenance and repairs to levees and revetments, acquire repetitive-loss properties and other at-risk floodplain properties, and improve flood warning and flood prediction capacity. The Parks and Recreation Division initiated an assessment of the threats to habitat value for its 20,000 acres of ecological lands.

#### **Built environment**

The county continued to assess and plan for impacts that events caused by climate change could have on its assets and infrastructure. Examples include analyzing the impacts that rising sea level would have on wastewater and road infrastructure, and incorporating projected changes in the Department of Transportation's infrastructure design. The county is choosing pavement materials that are more resilient to heat, and is sizing stormwater facilities to accommodate the increasing flows that are associated with extreme weather events. Capital improvement projects such as Vashon's Dockton Seawall replacement and the Duwamish Combined Sewer Overflow are being designed using more sophisticated and refined assumptions of future environmental conditions.

#### **Human health**

In 2009, Public Health staff began the important process of addressing the impacts climate change is projected to have on public health service delivery. Impacts such as more heat waves

and the increased threat of vector-related diseases, such as West Nile virus, are beginning to be recognized. Public Health began convening a range of community and nonprofit partners to improve response to climate-related health threats.

Public Health staff are also recognizing the connection between public health strategies and those that concurrently reduce greenhouse gas emissions. Deployment of sustainable transportation strategies that create safe, walkable communities, such as the completion in 2009 of the SW 98th Street walkway project, yield benefits for both public health and the climate.

#### **4. 2009 Assessment**

By 2009, King County staff had developed a comprehensive system to track the county's operational energy and greenhouse gas emissions. The county tracked data for all direct sources of emissions including diesel, gasoline, natural gas, heating oil, steam, propane and jet fuel used in all parts of county government—from Sheriff's Office helicopters to wastewater pump stations to buses. The data are used to assess progress and guide next steps and strategies to achieve target cuts in energy efficiency and greenhouse gas emissions.

As a participant in the Chicago Climate Exchange, the county annually reports direct greenhouse gas emissions from county operations to the Financial Industry Regulatory Authority, which audits the report. In 2008, county operations emitted 172,700 metric tons of carbon dioxide—the equivalent of the annual emissions of approximately 33,000 passenger vehicles or the energy use of 15,400 average homes.

The county's operational emissions in 2008 were 1.3 percent above the 2000 baseline emissions. This compares to emissions in 2007 that were 5.7 percent below the 2000 baseline. The increased emissions between 2007 and 2008 resulted largely from the county's decreased use of biodiesel—primarily because of cost considerations. It is important to note that the slight increase in emissions took place over an eight-year period when many county services expanded significantly. These include transit service, the primary source of the county's direct greenhouse gas emissions.

King County implemented a consolidated countywide database of utility costs and energy usage. The database software is used to establish baselines and quantify savings, allowing the county to track energy and resource consumption data for its facilities. Such detailed energy tracking is essential for King County to actively and strategically manage energy consumption. This tool also allowed for the county to streamline its energy and greenhouse gas emissions reporting.

As leaders in assessment of greenhouse gas emissions, King County staff participated in the Washington State Greenhouse Gas Emissions Reporting Rule Advisory Committee to help the Washington State Department of Ecology define efficient and appropriate reporting requirements. Additionally, through the American Public Transportation Association, King County proposed a rule to the Chicago Climate Exchange which would change the way bus greenhouse gas emissions are accounted for, which could result in a similar rule in regional or federal cap-and-trade legislation. This change could have important positive financial implications for public transit agencies.

#### IV. **Looking Forward: Priorities and Next Steps in 2010**

While climate change presents challenges, it also presents opportunities to deliver services in more sustainable ways and to encourage county residents and organizations to make climatefriendly behavior changes. Moving forward, some of our current ways of doing business must be reshaped to achieve aggressive county goals. We must aim for measureable, performance-driven outcomes, continue to be innovative and collaborative, and leverage limited resources for maximum benefit. Fortunately, many of the actions we take in response to climate change will have other benefits including job creation, saved dollars or new revenue through efficiency and renewable resource projects, reduction in other types of pollution, and improved public health.

The county's climate change work in 2010 will be strengthened by its acquisition in 2009 of more than \$75 million dollars in grant funding for work that is reducing greenhouse gas emissions and which is projected to create more than 80 direct new green jobs in the energy efficiency, transportation, and sustainable housing sectors. A list of the grants is in Appendix 1.

Other opportunities are the Solid Waste and Wastewater Treatment Divisions' biogas-to-energy projects. Environmental credits created at the West Point Wastewater Treatment facility and the Cedar Hills landfill will potentially create new revenue that could fund responses to climate change. Understanding developing exchange and renewable energy markets has made it possible for the county to claim and use these assets for the benefit of King County and its citizens.

#### Highlights of work planned for 2010

## 1. 2010 Leadership

#### **Collaboration**

Work with the Puget Sound New Energy Solutions consortium to develop a Puget Sound Regional Council proposal for funding from the new federal Sustainable Communities Initiative, and to coordinate regional deployment of electric vehicle infrastructure.

#### **Outreach and education**

- Launch Local Eyes on Sustainability, an interactive Web portal and social media program that will guide and reward individual and household practices that reduce greenhouse gas emissions and conserve energy while saving money and improving health. A suite of interactive resources will engage residents in a learning experience that uses geographic information and calculators to show the benefits of behavior changes, and that acknowledges and rewards positive behavior changes.
- Continue the Solid Waste Division's GreenTools, recycling, composting, and compact fluorescent light bulb "take it back" campaigns.
- Continue the Department of Transportation's Commute Trip Reduction program.
- When entering into contracts, incorporate provisions that foster reductions in greenhouse gas emissions.

### Advocacy

#### At the state level:

- Continue to be a strong local-government voice as regional, state and federal climate response legislation is crafted.
- Work to protect the Citizen's Clean Energy Initiative (I-937).
- Support energy efficiency financing legislation that will allow municipalities to provide upfront financing for energy efficiency projects in homes and businesses.
- Work to ensure that state legislation related to mandatory reporting of greenhouse gas emissions is updated to be consistent with recent Environmental Protection Agency rules.
- Continue playing an active role in ensuring that the state's biodiversity indicators are sensitive to the influence of climate change impacts.

#### At the national level:

- Continue to be an active participant in Climate Communities. This national coalition of cities and counties is educating federal policymakers about the essential role of local governments in addressing climate change, and is promoting a strong local-federal partnership to reduce greenhouse gas emissions.
- Continue to be engaged in development of the ICLEI-Local Governments for Sustainability STAR Community Rating System, which promotes development of communities that produce less emissions and are equitable and resilient.

#### 2. 2010 Mitigation: Reducing and Sequestering Greenhouse Gas Emissions

#### **Clean mobility**

- Using funds awarded by the U.S. Department of Energy to launch electric vehicle technology, purchase as many as 74 all-electric sedans for county vanpool and motorpool programs.
- Collaborate with Seattle, Bellevue, PSRC and the state to plan the location of more than 2,000 electric vehicle charging stations to be installed in 2010 and 2011.
- Expand the clean electric trolley network by extending Route 36.
- Replace 93 old 40-foot buses with new hybrid diesel-electric vehicles that are 30 percent more efficient
- Work on technology and infrastructure solutions that improve vehicle flow and reduce vehicle emissions
- Pursue initiatives to construct sustainable transportation hubs that combine major transit hubs, electric vehicles, and mixed-use, energy-efficient buildings.
- Continue implementing major elements of Transit Now, such as RapidRide bus rapid transit.
   Because Metro's revenues have declined steeply as a result of the economic downturn, Metro has been forced to defer some planned expansion of bus service and may make some service reductions.

#### Waste-to-resources and waste-to-energy

• Investigate the possibility of re-purposing biogas at the South Plant wastewater treatment facility.

- Begin construction of a biogas-fueled power plant at the West Point wastewater treatment facility. Renewable electricity sales will partially finance construction of this project, which will greatly reduce waste at the plant while creating a new source of renewable energy.
- Continue negotiating with Puget Sound Energy to monetize the value of the environmental benefits associated with the Cedar Hills landfill renewable biogas project, which came online in 2009.

#### **Energy and resource efficiency**

- Use more than \$3 million in federal stimulus funding (from the Energy Efficiency and Conservation Block Grant Program) for energy efficiency projects. These include upgrades to the Maleng Regional Justice Center and the Black River building, as well as energy efficiency components of affordable housing projects, including the YWCA family village in Issaquah.
- Consider issuing a bond to fund additional energy efficiency projects through the new federal
  Qualified Energy Conservation Bond program. This effort could fund up to \$12 million in
  projects to occur over the next few years. The county would likely structure many of these
  projects as "performance contracting" projects, meaning that energy and cost savings would
  be contractually guaranteed by the project developer, guaranteeing that the bond would be
  repaid.
- Continue to migrate from paper to electronic business processes in county work groups and
  with customer. Processes include the Accountable Business Transformation program (ABT),
  which automates workflow for authorizations, record-keeping, and process tracking; Neogov,
  the online hiring system; and green office practices such as electronic communications and
  default double-sided printing.

#### 3. 2010 Adaptation: Preparing for the Impacts of Climate Change

#### **Built environment**

- Work on an asset inventory detailing which infrastructure assets should be included in adaptation planning, as well as an assessment of climate change impacts.
- Share the Wastewater Treatment Division's sea-rise modeling research, tools and lessons learned with other county divisions to help them asses impacts on assets such as the regional trail network and seawalls.

#### **Natural environment**

- Launch a program supported by the U.S. Forest Service, "Urban and Community Forestry Climate Preparedness and Response," which will educate and provide incentives for landowners to manage their land to minimize emissions and improve natural system resiliency to climate change impacts.
- Extend a partnership between King County Parks, the U.S. Forest Service and EarthCorps to train youth in sustainable land management practices.

#### **Human health**

 In 2010, King County Public Health will strengthen partnerships with other agencies and departments to conduct mitigation and adaptation work. The division also will work with scientific researchers to better understand projected climate change impacts and develop education materials for policy makers and the public. Public Health also will support the state-led development of "Washington's Approach to an Integrated Climate Change Strategy" by actively participating in the Human Health and Security topic advisory committee.

#### **4.** 2010 Assessment

In 2010, the county will assess its climate response efforts with the goal of improving their efficiency, transparency, accountability and effectiveness.

The county will again track and report its direct annual operational energy and greenhouse gas emissions to the Chicago Climate Exchange; the data will be audited by the Financial Industry Regulatory Authority. This emissions report is the primary way the county tracks progress towards its operational energy and greenhouse gas mitigation targets.

The State of Washington and federal Environmental Protection Agency will begin phasing in new greenhouse gas emissions reporting requirements in 2010. The county will be required to submit annual emissions reports for the Cedar Hills landfill as well as several closed landfills.

The most important next step related to assessment in 2010 will be completion of a King County community greenhouse gas emissions inventory that will estimate emissions in two ways: (1) using a geographic protocol following the City of Seattle's community emissions methodology and (2) using a consumption-based method that will account for upstream emissions associated with goods and services consumed by county residents and businesses. This inventory will inform future regional efforts to achieve climate pollution reduction targets. It will directly explore how the information collected through the analyses can be translated into a policy framework that can drive local climate response decision making and program investments.

#### V. Conclusion

The county must continue responding to climate change to protect our environment, economy, quality of life, and public health. King County will continue working toward its adopted goal of reducing greenhouse gas emissions 80 percent below 2007 levels by 2050. At the same time, it will anticipate and prepare for the impacts of climate change on the natural and built environment and on human health. The county's citizens have major investments in public infrastructure that may be damaged by climate change impacts such as increased flood severity and sea level rise. It is prudent from a risk-management perspective to make investments now to avoid costly damage in the future.

In these difficult economic times, the argument might be made that addressing climate change should not be a priority. However, many of the county's climate response initiatives—such as switching to hybrid buses and installing LED traffic signals—have saved the government money while reducing emissions. The county will continue to pursue climate programs that save money, create new revenue streams, or lead to the creation of new green jobs for the region.

## **Appendix 1: 2009 Climate Response Related Grants**

GRANT	AMOUNT
Clean Mobility	
Metro East Base air compressor replacement	\$100,000
Metro Route 36 trolley terminal overhead wire	\$400,000 (\$700,000
, and the second	including City of Seattle)
Vehicle Electrification (charging stations)	\$700,000
20 DDES Hybrid Vehicle Upgrades	\$200,000
Roads Novelty Hill ITS	\$300,000
Transit – social marketing to enhance community based travel	\$150,000
Roads – enhance energy efficiency for roads maintenance	\$100,000
EECBG project administration	\$441,000
ACCESS hybrid diesel electric vans	\$1,540,000
68 various alternative fuel and hybrid vehicles	\$358,340
47 hybrid diesel electric 40 foot buses (ARRA)	\$35,784,365
Incremental cost for hybrid buses (2008)	\$1,166,667
Bus acquisition funds (hybrid &/or clean diesel)	\$21,940,000
RapidRide buses (hybrids- Ballard/West Seattle)	\$6,000,000
10 hybrid diesel-electric work trucks	\$250,000
Hybrid diesel-electric work trucks (CMAQ)	\$150,000
RapidRide Pacific Hwy South transit improvements	\$1,798,160
Vehicle Electrification	
74+ charging stations on county property	\$740,000 (by eTech)
Other public charging stations	\$200,000 (estimated, tbd)
Electric vehicle infrastructure	\$300,000 (estimated, tbd)
Energy Efficiency	
Audit Wastewater facilities and identify efficiency projects	\$190,000
Replace inefficient blowers in West Point sewage Treatment Plant	\$280,000
Fluorescent bulb recycle project	\$100,000
Black River building LEED upgrade	\$245,000
Earlington building energy Efficiency upgrades	\$300,000
Maleng Regional Justice Center efficiency upgrades	\$805,000
Technical assistance to permit applicants and homeowners	\$200,000
Energy efficient heating systems in low-income units	\$250,000
YWCA family village at Issaquah	\$750,000
Waste to Resources	
Engine/generator to convert manure	\$160,000
Sequestration	
U.S. Forest Service Urban and Community Forestry Climate	\$135,229
Preparedness and Response	
TOTAL	\$75,483,000